Department of Physics
St. Bede's College, Shimla

Online Talk

Basics of Scilab & Simulations using Xcos.

On August 10, 2024, the Physics Club, **Spectrum**, hosted an online talk entitled "***Basics of Scilab & Simulations using Xcos***." Dr. Anil Khachi, Assistant Professor of Physics at Chandigarh Engineering College, Jhanjeri, delivered a talk.

Objectives:

- To familiarize participants with Scilab and Xcos as open-source alternatives to commercial software like MATLAB, emphasizing their capabilities for numerical computation, modeling, and simulation.
- To provide a foundational understanding of Scilab's features, including scripting, mathematical functions, and data visualization tools, enabling participants to use it effectively for basic computational tasks.
- To teach participants how to use Xcos for building and simulating dynamic systems and models, showcasing its graphical interface and simulation tools.
- To offer practical experience by guiding participants through step-by-step examples of creating simulations and solving computational problems using Scilab and Xcos.

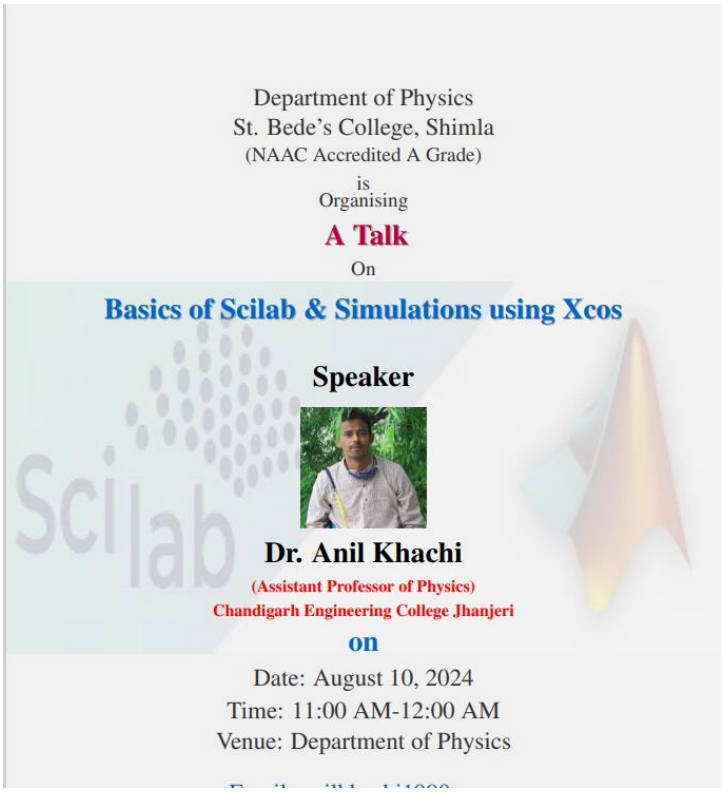
Description

The session introduced Scilab and Xcos as powerful, open-source alternatives to commercial software like MATLAB. These tools offer user-friendly interfaces for numerical computation, modeling, simulation, and data visualization.

Dr. Khachi emphasized Scilab's capabilities in matrix computations, linear algebra, calculus, and data plotting. He demonstrated the software's high-level programming language for complex computations. Additionally, the speaker provided an overview of Xcos, a graphical environment within Scilab for modeling and simulating dynamic systems, analogous to Simulink. The workshop aimed to equip participants with the fundamental knowledge and skills required to effectively utilize Scilab and Xcos for various applications.

Outcome:

Participants gained a strong understanding of the basic features and functions of Scilab and Xcos, including how to use them for numerical computations, data visualization, and simulations. These outcomes reflect the workshop's goal of providing participants with a solid understanding of Scilab and Xcos, helping them develop practical skills and enhance their academic and research capabilities. To improve participants' skills in computational physics and simulation, preparing them for more advanced studies or research in related fields.



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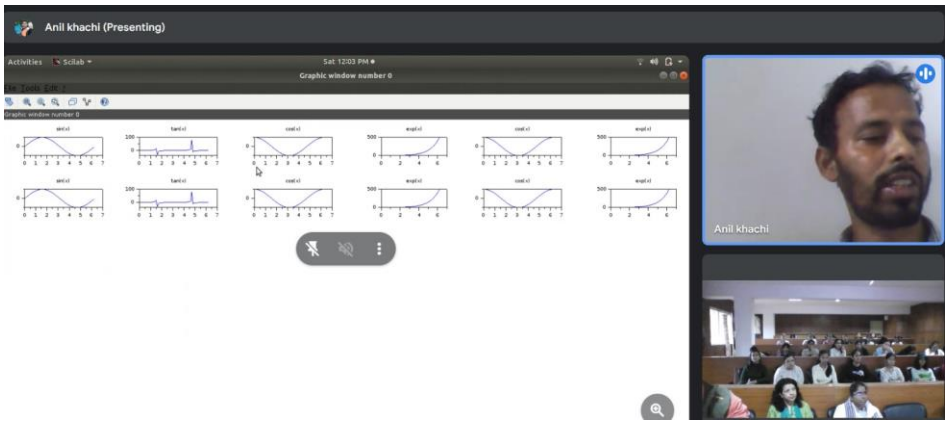
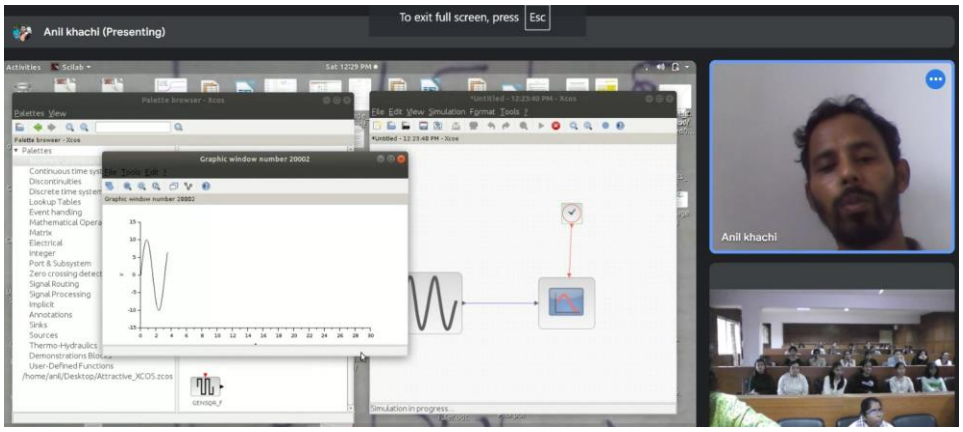




Department of Physics
St. Bede's College, Shimla

Celebration of National Space Day

(23.08.2024)

The Physics Department of St. Bede's College Shimla marked National Space Day with a series of activities aimed at commemorating India's strides in space technology and exploration. These initiatives served as a poignant reminder of the invaluable contributions made by Indian scientists and researchers in the field of space science.

Objectives:

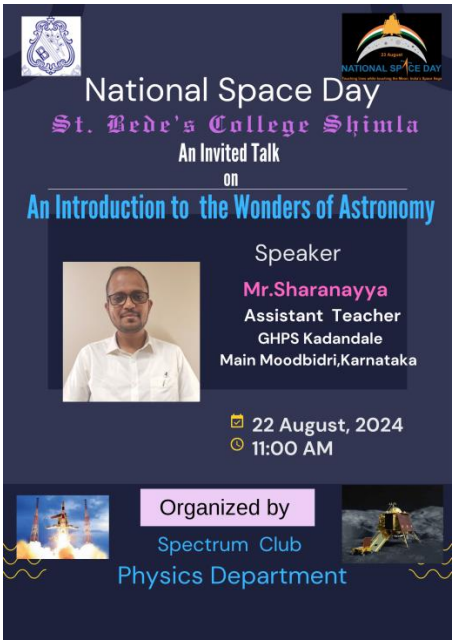
1. To highlight and commemorate the significant contributions of Indian scientists and researchers in the field of space exploration and technology, particularly through India's space missions and advancements.
2. To educate students and participants about the importance of space science, its applications, and its role in shaping technological progress and innovation in India and globally.
3. To inspire students to take an active interest in space sciences and related fields, fostering curiosity and encouraging future careers in space research and technology.
4. To honor the pioneering efforts of Indian scientists and researchers who have played a key role in India's space programs, such as the Indian Space Research Organisation (ISRO) and its missions.

Activity i

On August 22, 2024, the department organized an engaging online talk titled "An Introduction to the Wonders of Astronomy," featuring Mr. Shranayya, Assistant Teacher at GHPS Karnataka, as the guest speaker. Mr. Shranayya delved into the pivotal role of astronomy in ancient societies, highlighting its functions as a navigational aid, its influence on agricultural practices through calendar systems, and its impact on religious and cultural beliefs. He also discussed how astronomy continues to advance scientific knowledge and enrich the symbolic and architectural heritage of civilizations. During the session, Mr. Shranayya introduced Stellarium, a

free open-source planetarium software designed for computers. tellarium provides a realistic 3D portrayal of the sky, faithfully replicating celestial views observable with the naked eye, binoculars, or a telescope.

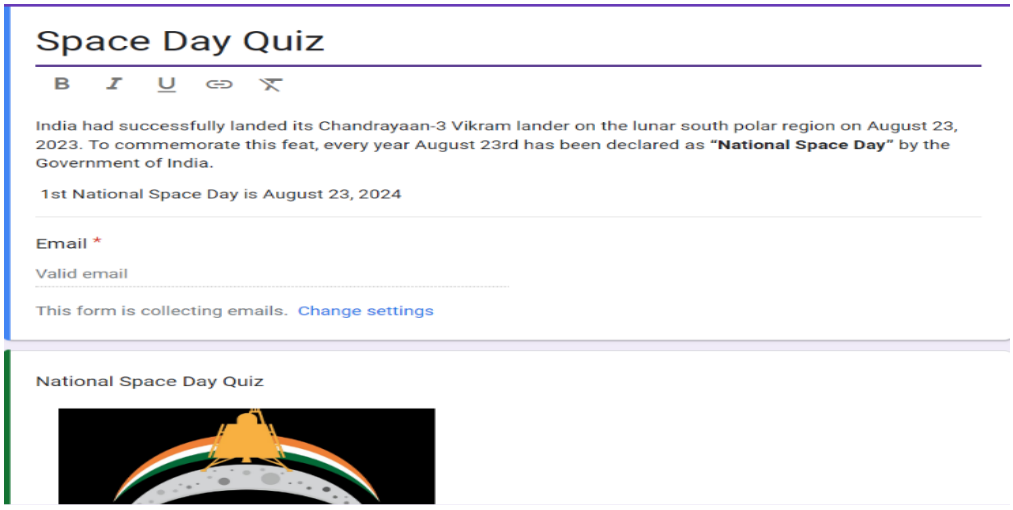
This celebration not only honored past achievements but also emphasized the enduring significance of astronomy in shaping human society and culture. By fostering awareness and appreciation of space science, the Physics department aims to inspire students and nurture their interest in exploring the cosmos and pursuing careers in related fields.



Activity ii

Department of physics conducted an online Quiz on ISRO.

An online Quiz on ISRO was conducted.



Activity iii

Students of B.Sc (NM) along with Faculty Dr. M.S. Thakur, Assistant Professor, Chemistry Department attended and participated in a two-day workshop organized by

the Himachal Pradesh Council for Science, Technology & Environment (HIMCOSTE) in collaboration with the Centre for Science Learning and Creativity in Shoghi on August 22-23, 2024.

In the quiz competition organised by HIMCOSTE, students of the college, Roopanshi Gupta, and Nishtha Verma, won the first prize. They were awarded certificates and a trophy by the organizers in recognition of their outstanding performance.

एक नजर Divya Himachal 24/08/24

प्रश्नोत्तरी प्रतियोगिता में सेंट बीड्स कालेज फर्स्ट

शिमला। राष्ट्रीय अंतरिक्ष दिवस के अवसर पर गुरुवार को शोघी में सेंटर फॉर साइंस लर्निंग एंड क्रिएटिविटी के सहयोग से हिमाचल प्रदेश विज्ञान, प्रौद्योगिकी और पर्यावरण परिषद द्वारा एक प्रश्नोत्तरी प्रतियोगिता आयोजित की गई। प्रतियोगिता मे आरकेएमवी कालेज, संजौली , कोटशेरा कालेज, सोलन कालेज, जेपी यूनिवर्सिटी और शूलिनी यूनिवर्सिटी ने भाग लिया। इस प्रतियोगिता में सेंट बीड्स कालेज शिमला की छात्राएं रूपांशी गुप्ता और निष्ठा वर्मा ने प्रथम पुरस्कार प्राप्त किया। इन छात्राओं को सेंट बीड्स कालेज शिमला के अलंकरण समारोह में डाक्टर अमरजीत शर्मा ने सम्मानित किया

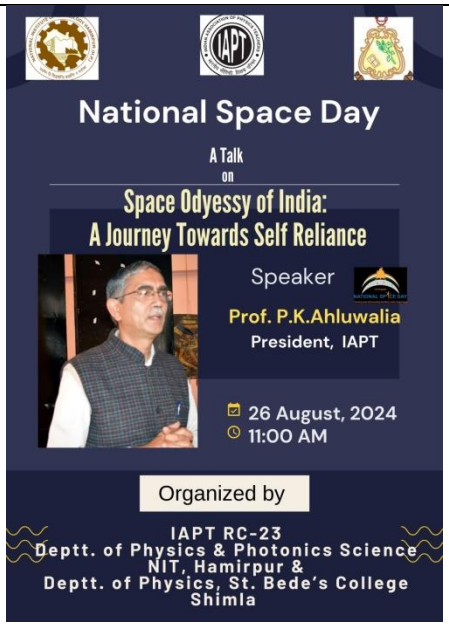
i. Students of B.Sc along with Faculty Dr. Sr. Susai Assistant Professor, Physics Department attended and participated in Popular Science Lecture ***"Upcoming ISRO missions & Career Opportunities in ISRO"*** organized by Himachal Pradesh

Council for Science, Technology & Environment (HIMCOSTE) in collaboration with RKMV Shimla

ii. Department of Physics St. Bede's College, Shimla, and Department of Physics and Photonics Science NIT Hamirpur in collaboration with IAPT RS-23 organised an online invited talk by Prof. P.K. Ahluwalia, President, Indian Association of Physics Teachers (IAPT) on the topic ***"Space Odyssey of India: A Journey of Self-Reliance."***

iii.

1.

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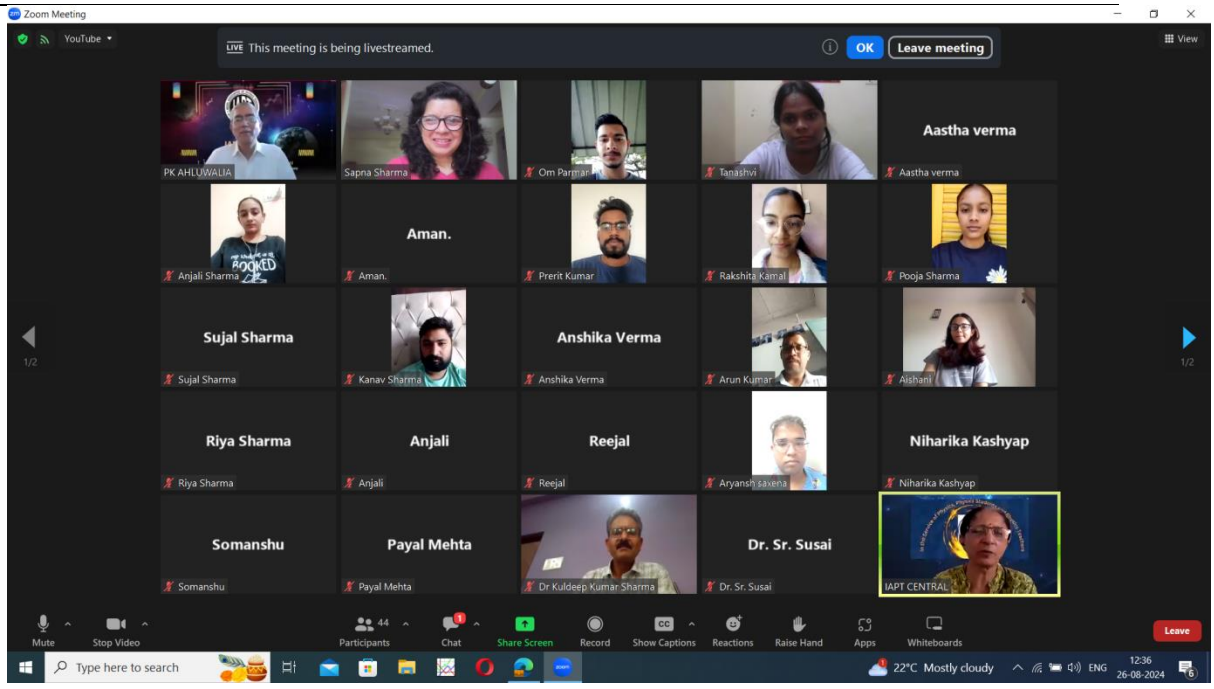
Space Odyssey of India: A Journey Towards Self Reliance
23 August
NATIONAL SPACE DAY
Touching lives while touching the Moon: India's Space Saga
PK Ahluwalia
President IAPT
PK AHLUWALIA
Sapna Sharma
IAPT CENTRAL
Kajal Kumari
Jessica
somesh gupta
Om Parmar

iv.


Zoom Meeting
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PK AHLUWALIA
Sapna Sharma
Om Parmar
Tanishvi
Aastha verma
Anjali Sharma
Aman.
Prerit Kumar
Rakshita Kamal
Pooja Sharma
Sujal Sharma
Kanav Sharma
Anshika Verma
Arun Kumar
Aishani
Riya Sharma
Anjali
Reejal
Aryansh saxena
Niharika Kashyap
Somanshu
Payal Mehta
Dr Kuldeep Kumar Sharma
Dr. Sr. Susai
IAPT CENTRAL

Outcome:

Participants gained a deeper understanding of India's contributions to space science and technology, particularly the milestones reached by ISRO in space exploration and missions. The event inspired students to pursue careers or further studies in space science, engineering, and related fields, fostering a new generation of space enthusiasts and researchers.

Department of Physics
St. Bede's College, Shimla

Educational Visit to Central Potato Research Institute (CPRI), Shimla

Date: September 25, 2024

Objectives:

1. To complement classroom learning by gaining hands-on experience in a real-world setting.
2. To gain insights into advanced analytical instruments and develop essential technical expertise.
3. To foster critical thinking while acquiring new skills and expanding knowledge**.**

Description

The Department of Physics at St. Bede's College organized an educational visit to the Central Potato Research Institute (CPRI), Shimla, for the B.Sc. III students on September 25, 2025. Sr. Susai, Assistant Professor in the Physics Department, accompanied the students on this informative trip.

During the visit, students had the opportunity to interact with the scientists at CPRI, who shared valuable insights into the institute's operations and its significant achievements in agricultural research. Additionally, the students were given a detailed explanation of the working principles and handling of the Electron Microscope, further enhancing their understanding of advanced scientific techniques.

Outcomes:

The visit provided students with the opportunity to connect theoretical knowledge from their physics studies to real-world applications, particularly in the fields of instrumentation and material analysis.

Department of Physics
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Workshop on Xcos

On October 3, 2024, the department of physics hosted a workshop on **Xcos: A Simulating Tool.** Professor OSKS Sastri from the School of Physical & Material Science at Central University Dharamshala was the esteemed resource person.

Objectives:

- To provide participants with a comprehensive introduction to Xcos, its features, and its applications in simulating physical systems.
- To facilitate practical, hands-on sessions where attendees can directly engage with the tool, allowing them to create and analyze simulations.
- To demonstrate how Xcos can be utilized in various research areas within physics and material science, enhancing the participants' ability to apply these concepts in their own work.

Description of the Workshop

The workshop on **"Xcos: A Simulating Tool"** was led by Professor OSKS Sastri from the School of Physical & Material Science at Central University Dharamshala. The session covered fundamental concepts in physics, such as solving differential equations for periodic motion and utilizing models, culminating in practical simulations using the Xcos tool of Scilab. Participants were engaged in hands-on sessions exploring the powerful capabilities of Xcos for simulating complex physical systems.. The workshop adopted an interactive environment, encouraging students to pose questions and engage in discussions. It was a fantastic opportunity for students and faculty alike to deepen their understanding and application of this innovative tool.

Outcomes of the Workshop

Students gained a solid understanding and hands-on skills on Xcos, including its functionalities and how it fits into the broader context of simulation tools in physics.

Overall, the workshop was a resounding success, contributing to the ongoing development of skills and knowledge in the realm of physics and simulation technology!

Department of Physics
St. Bede's College, Shimla

Webinar on Sir Jagadish Chandra Bose

Vigyan Bharti, a prominent science communication organization, organized an insightful webiinar on the life and contributions of one of India's greatest scientists, Sir Jagadish Chandra Bose (J.C. Bose) on 03.12.2024. The students of physics & other science department participated in this talk.

Objectives: The main objectives of the webinar were

i. To Promote Awareness of J.C. Bose's Scientific Legacy
ii. To Highlight Bose's Pioneering Work in Biophysics.
iii. To Inspire Students with Bose's Interdisciplinary Approach.
iv. To Foster Scientific Curiosity and Critical Thinking
v. To Celebrate Bose's Role in the Global Scientific Community

Description:

The talk highlighted Bose's pioneering work in various fields, from plant physiology to radio waves, and his profound impact on the development of modern science. The talk was delivered by Dr. Amarjeet Singh a renowned physicist and science communicator from Himachal Pradesh University. The speaker began by emphasizing the importance of understanding the contributions of Indian scientists like J.C. Bose, whose work laid the foundation for several breakthroughs in both the natural and physical sciences. The speaker started by discussing Bose's early life, including his upbringing in a Bengali family with a deep respect for education. He was born on November 30, 1858, in Mymensingh, which is now in Bangladesh. Despite facing early obstacles in his educational journey, Bose was determined to pursue his passion for science. He first studied at the University of Calcutta and later went to England to pursue higher education at the University of Cambridge.

The speaker highlighted Bose's experiment in which he measured plant responses to stimuli using a mechanical device known as the "crescent-shaped leaf bending apparatus," which could measure the response of plants to light, touch, and sound. His work on plant

communication and sensitivity laid the foundation for what would later become known as "plant neurobiology." One of Bose's most significant inventions was the **Crescograph**, a device that could measure the growth of plants with great precision. This instrument allowed Bose to prove that plants not only respond to stimuli but also grow in response to emotional and physical factors, such as sound and light. The Crescograph revolutionized the study of plant life, enabling future research into plant growth and behavior.

The talk also covered J.C. Bose's contributions to the field of physics, particularly his pioneering work on radio waves. Bose was one of the first scientists to demonstrate the ability to generate and detect electromagnetic waves, long before the likes of Guglielmo Marconi. His experiments in the late 19th century showed that wireless communication was possible, an area that Marconi later popularized. Bose's work on the properties of radio waves, including their reflection and transmission, laid the groundwork for the development of wireless telegraphy.

The event ended on a positive note, with many attendees expressing their renewed admiration for J.C. Bose's groundbreaking work.

Outcome:

Students gained a deeper understanding of Sir Jagadish Chandra Bose's pioneering research and his contributions to the fields of physics, biology, and plant science, leading to greater respect for his scientific legacy. They were inspired to think beyond traditional academic boundaries, recognizing the importance of interdisciplinary approaches to scientific research, as exemplified by J.C. Bose's work in biophysics and plant physiology.

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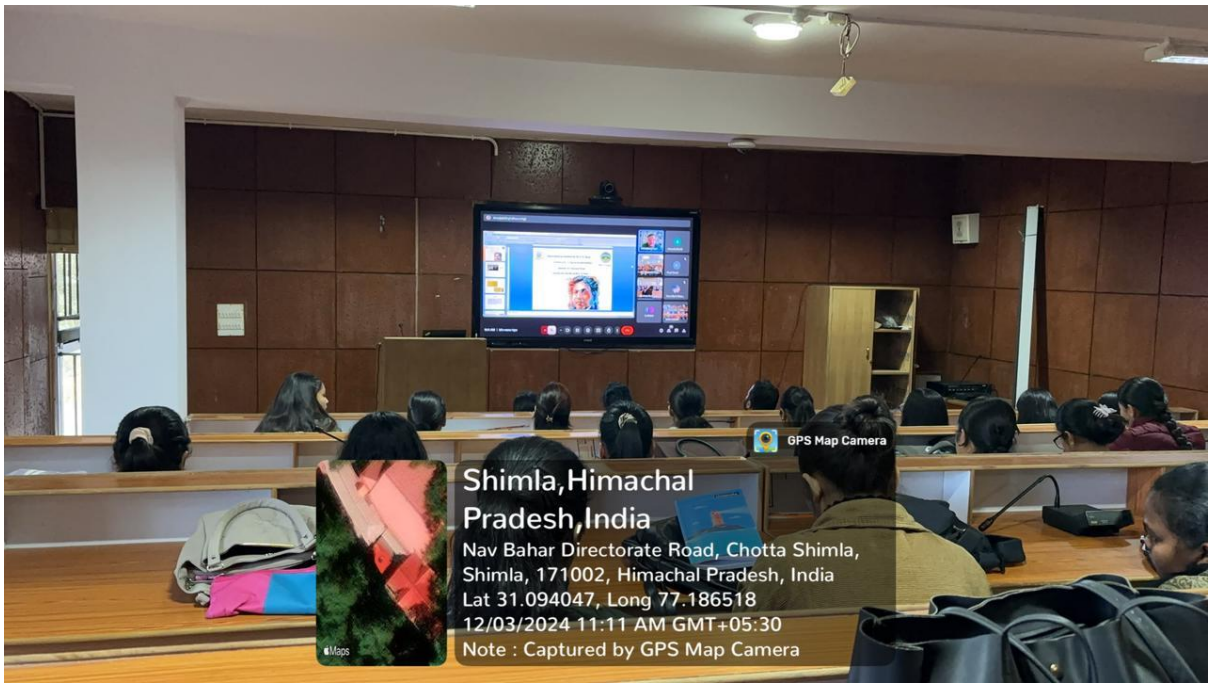


Department of Physics
St. Bede's College, Shimla

A WEBINAR on

Innovations in Science by Sir J C Bose

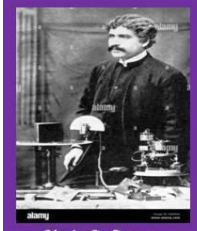
Dept. of Physics

A tribute to Sir J C Bose on his 166th Birthday

Date
3-12-24

Organized by: विज्ञान भारती हिमाचल प्रदेश (VIBHA-HP)

Time
11:00 AM


Sir J. C. Bose

About Sir J. C. Bose: **Sir Jagadish Chandra Bose** (30 November 1858 – 23 November 1937) was an Indian polymath with interests in biology, physics, botany and writing science fiction. He was a pioneer in the investigation of radio microwave optics, made significant contributions to botany, and was a major force behind the expansion of experimental science on the Indian subcontinent. Bose is considered the father of Bengali science fiction. A crater on the Moon was named in his honour. He founded the Bose Institute, a premier research institute in India and also one of its oldest. Established in 1917, the institute was the first interdisciplinary research centre in Asia. He served as the Director of Bose Institute from its inception until his death.

Speaker
Dr. Amarjeet Singh
Treasurer VIBHA-HP

Webinar Link: meet.google.com/bfv-rwnx-tqw

Convener
Dr. RAMAN SHARMA
Secretary VIBHA-HP

Department of Physics
St. Bede's College, Shimla

Celebrating the International Year of Quantum Science & Technology (IYQ 2025)

To celebrate the immense potential and ongoing advancements in quantum science the United Nations has declared 2025 as The **International Year of Quantum Science & Technology (IYQ 2025)**. The Spectrum Club of the Physics Department organized an engaging and enlightening event to celebrate the International Year of Quantum Science & Technology (IYQ 2025) on February 18, 2025.

Objectives:

The event aimed to raise awareness of quantum mechanics and its transformative role in modern science and technology. The celebration provided an opportunity for students to deepen their understanding of the subject as well as fostering a sense of curiosity about the advancements in quantum science.

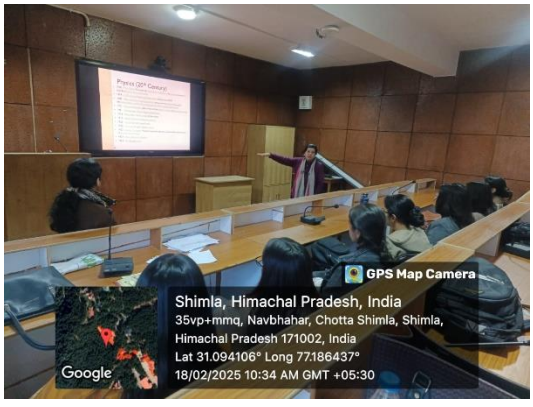
Description:

The event began with a brief talk on the development of Quantum Mechanics by Dr. Sapna Sharma, HOD, Physics Department. After that a captivating documentary that traced the evolution of quantum mechanics, from its humble beginnings to its current status as a foundational pillar of modern physics was screened. The documentary explored the significant milestones in the field, such as Max Planck's introduction of quantum theory, Albert Einstein's work on the photoelectric effect, and the contributions of Niels Bohr, Werner Heisenberg, and Erwin Schrödinger. The screening also highlighted the crucial role quantum mechanics plays in various modern technologies, including LASERS, semiconductors, quantum computing, and telecommunications.

The documentary was well-received by the students, who were engaged by the historical perspective as well as the exciting prospects of future quantum innovations.

Following the documentary, the Spectrum Club organized an interactive quiz to test the student's comprehension and to spark further interest in quantum science.

Outcomes: The IYQ 2025 significantly raised the awareness of quantum science and technology.



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National Science Day

On February 27, 2025, the Physics Department of St. Bede's College, Shimla, in collaboration with IAPT RC-23 Himachal Pradesh, hosted an insightful and thought-provoking online talk titled ***"From Hypothesis to Technology: Legacy of Louis de Broglie"*** *by* renowned physicist and National President of IAPT, Prof. P.K. Ahluwalia to celebrate National Science Day.

Objectives:

i. To celebrate and acknowledge the contributions of scientists and their impact on scientific development in India, in alignment with National Science Day, which honors the discovery of the Raman Effect by C.V. Raman.

ii. To inspire students by showcasing the relationship between theoretical hypotheses and technological advancements, and to promote deeper interest in physics as a discipline

iii. To show how scientific discoveries, such as those of Louis de Broglie, have transformed modern technology, and how hypothesis-driven research can lead to innovations that shape contemporary society.

Description:

The event was an exceptional opportunity for students, faculty, and science enthusiasts to explore the lasting impact of Louis de Broglie, a pioneer in the field of quantum physics, whose groundbreaking contributions continue to shape the world of modern science and technology.

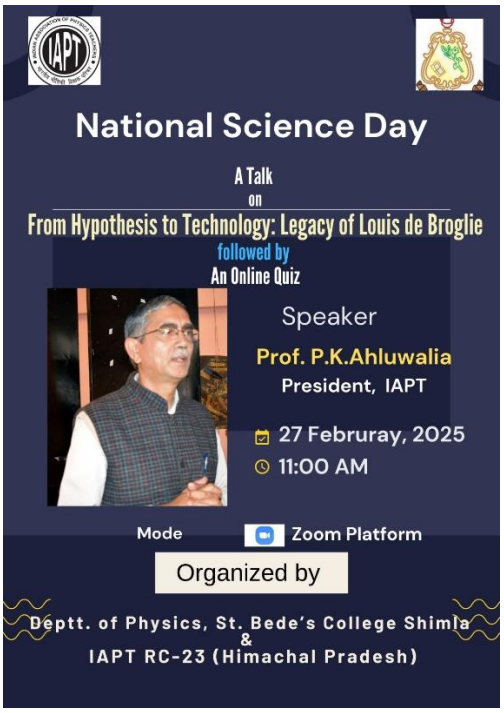
Prof. Ahluwalia delved into de Broglie's revolutionary hypothesis that particles, such as electrons, could exhibit both particle and wave-like properties—a concept that would later become the cornerstone of quantum mechanics.

The session became more interactive with fun **doodles** and a **quiz**, engaging the audience and sparking curiosity.

This talk was a fitting tribute to Louis de Broglie's remarkable legacy and served as a powerful reminder of the endless possibilities that arise when scientific hypotheses meet technology. The session left the audience inspired and eager to explore the vast and ever-evolving world of physics.

Students from Govt. College Bilaspur also joined the webinar.0

Outcomes: Participants gained a deeper appreciation of Louis de Broglie's revolutionary ideas on wave-particle duality and their significant impact on the development of quantum mechanics and modern physics.



On 28th February, the Spectrum Club of the Physics Department organized inter-class competitions for poster making and slogan writing, celebrating National Science Day. Aanya Jaret from BSc.I won the first prize , while Jessica Sharma also from B.Sc. I secured the

second prize in poster making competition. Aastha Verma from BSc I won the first prize, while Anshika, also from BSc I, secured the second prize in slogan writing.